SUGGESTIONS

REGARDING

FOREST ADMINISTRATION

IN

BRITISH BURMA.

BY

D. BRANDIS, F.R.S.,

INSPECTOR-GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA.

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SUGGESTIONS

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Introduction.

THE present report does not relate to the current work of the department, but to its permanent organisation, and particularly to the demarcation of the reserves. I landed at Rangoon on the 3rd December 1875, and, after examining the working of the timber depôt and agency office, and conferring on the general questions of forest administration with Major Street (the Officiating Secretary to the Chief Commissioner), Mr. DeCourcy Ireland (the Deputy Commissioner of Rangoon), and Mr. Ribbentrop (the Officiating Conservator of Forests), and submitting to the Chief Commissioner the conclusions arrived at, I started, on the 14th, for a short tour to a portion of the Rangoon and Tharrawaddy forests, from which I returned on the 4th January, having proceeded north as far as the Boben and the Kangyee reserves. While out I had the privilege of discussing the suggestions of the present report with several forest officers and particularly with Mr. Strettell, Deputy Conservator of the Rangoon division, and Mr. Popert, in charge of the forest demarcation, as well as with Mr. A. Hough, the officer appointed by the Chief Commissioner to represent the Deputy Commissioner in the work of demarcation. After my return to Rangoon, I conferred again with the officers already named, as well as with Colonel Ardagh, the Commissioner of Pegu, who had meanwhile returned to Rangoon, and with Mr. Slym, Deputy Conservator of the Moulmein division, who had come over to Rangoon to meet me. I regret that the short time at my disposal this year did not permit my visiting Henzada, Prome and Thayetmyo, in order to confer with the Deputy Commissioners of those districts. I had to leave Rangoon for Calcutta on the 16th January.

As the results of the observations made and information collected in my tour will be recorded in the present report, it will not be necessary here to give a detailed account of the places and forests visited by me, but I may at once proceed to submit these proposals, which I shall arrange under the following main heads:—

I.—Reserves.
II.—District forests and reserved trees.
III.—Organisation of department.

CHAPTER I.

ON RESERVES.

Aim and object of forest reserves in Burma.

2. It is now acknowledged on all sides that the demarcation of permanent forest reserves is at present the most important work to be accomplished by the Forest Department in Burma. It is not possible to say much at present regarding the forest area, which should eventually be included within the permanent reserves. In my memorandum of the 1st July 1874, which is appended to Mr. Baden-Powell's report on the forest system of British Burma, I endeavoured to sketch the

leading points which should serve as a guide in the consideration of this question, and it may not be out of place briefly to recapitulate them.

Apart from climatic and general considerations, the aim and object of forest conservancy in Burma may be stated to be permanently to maintain a forest area sufficient to furnish the requirements of the country and of export trade in teak, catechu, *thitsee*, wood-oil, and a large variety of other timbers and forest produce. What the future requirements of the country and export trade in this respect will be it is not possible to foresee at present. With regard to teak we know that the produce of Government forests during the last five years, from 1870-71 to 1874-75, has been on an average 45,290 tons a year, and that the average imports from beyond the inland frontier during the same period have amounted to 110,278 tons. Of this quantity 103,288 tons were exported by sea annually, while 52,280 tons were consumed in the country. This represents the present requirements of the country and export trade in this one article alone, and it was shown in that memorandum that the permanent production of a sufficient quantity would require at least 1,200 square miles of well-stocked and well-cared-for teak forest.

But it is idle to suppose that the demand for teak timber will not increase. Up to the present time it has increased steadily, and its excellent qualities are such that it is not likely to be supplanted by iron or by any other kind of timber. On the other hand, the possible supply of teak timber from other sources is limited, and it will be well to guard against sanguine expectations in that respect. The teak reserves of India Proper are limited, and all that they can be expected to do will be to furnish the requirements of the country. As to the forests beyond the frontier, in Burma Proper and in Siam, on the feeders of the Irrawaddy, Sittang and Salween rivers, it is well known that the distance of the good timber from the waterway increases year by year, and that the most reckless destruction of young and old trees takes place everywhere. Indeed, the size and quality of the foreign timber imported into Moulmein is deteriorating already, and the time is not far distant when the requirements of the export trade from the Burma Ports must to a great extent be met by the produce of our own forests. A great change in this respect has already taken place. During the first six years of the existence of the Forest Department in Burma from 1856 to 1861, the forests yielded 20,191 tons annually on the average, while the annual quantity of timber imported from foreign territory at that time was about 100,000 tons. During the last five years the teak timber brought from British forests, that imported from foreign territory and that exported from Rangoon and Moulmein, has been as follows. The quantity is given in tons of fifty cubic feet :—

	Yield of Government forests in British Burma.	Imports from foreign territory beyond the inland frontier.	Export from Rangoon and Moulmein.
1870-71	57,086	82,484	81,029
1871-72	52,126	98,409	87,546
1872-73	39,698	78,027	115,645
1873-74	39,633	126,557	116,418
1874-75	37,910	165,913	115,806
Total . . .	226,453	551,390	516,442

Teak is also found in Java and Borneo, but the forests are of limited extent, and the only sources which, in future, may be expected to compete with the produce of the Burma forests are the hilly countries drained by the Bangkok and the Cambodia rivers. The extent of teak in those countries is not precisely known, but it certainly is much less than on the Salween, Sittang, and Irrawaddy rivers.

Under these circumstances we are fully justified in saying that 1,200 square miles of good teak-producing forest, perfectly protected, is the smallest area we should be satisfied with as permanent reserves in Burma. These proposed teak reserves will yield large quantities of bamboo, other timbers and forest produce in addition to teak, but it has frequently been explained and it is acknow-

ledged that, besides these, certain tracts must be set apart for the permanent yield of catechu, *thitsee*, wood-oil, and of a great variety of valuable timbers, among which *thingan*, *padouk*, *thitkado*, *thitka*, *pymmah*, *engyin*, *pynkadoe*, and *theya* take the first place. In addition to these requirements there is no doubt, and this has with great force and justice been represented in Mr. Baden-Powell's report, that for climatic and general reasons it is necessary to keep a large proportion of the hills well-wooded. Their denudation would have a most injurious effect. Thus, I would strongly advocate the formation of a large reserve north of Rangoon, extending from the head waters of the Hmaubee Khyoung to Oakhan, and comprising the hills between the Hline and Pounglin rivers. This reserve would, perhaps, comprise from 200 to 300 square miles. The proportion of teak in the forest is at present insignificant, but it must in my opinion be maintained intact, on account of its vicinity to Rangoon, for, apart from the necessity of providing a reserve of charcoal and firewood for the town, the climatic effect of clearing away all forests in the vicinity of Rangoon, is not known, and may prove to be of serious consequence. The forest immediately north of Rangoon beyond the pine-apple gardens, has, I understand, some years ago, been given away under the waste-land grant rules, and is no longer under the control of Government. It is probable that the cool nights which Burma enjoys throughout the year are, in a great measure, caused by the large extent of forest. For similar reasons, and in order to secure a permanent supply of bamboos to Rangoon, I also advocate the formation of extensive reserves on the hills between the Pounglin and Pegu rivers and east of the Pegu river.

One class of reserves only contemplated.

3. What the aggregate area of these reserves in the different districts of Burma should be, it is not possible at present to predict. This question can obviously not be settled on general considerations for the entire province; each district must be taken up on its own merits in this respect. As most progress has been made in demarcation in that portion of the Thayetmyo, Prome, and Henzada districts, which is situated between the Irrawaddy river and the Yomah range, and, as it is in every respect desirable to complete the work in that part of the country as soon as possible, the suggestions of the present report will be confined to the area included within these limits.

In Mr. Baden-Powell's interesting report of 1873, it was proposed to form two classes of reserves—ordinary and special—both to be in charge of the Forest Department. The ordinary reserves it was proposed should comprise the bulk of the forests in the hills. Their protection should mainly apply to certain reserved kinds of trees; but *toungya* cultivation, jungle fires and the collection of minor forest produce should also be prohibited without special permission. These are the provisions proposed in Rule 9 of the proposed Forest Rules. The special reserves should consist of a limited area of compact forest of the very best growth, aggregating about 250 square miles, and their main object would be the production of a permanent supply of teak timber, catechu, and other timber and products required for consumption in the country and for export trade. The special reserves were to be planted up with teak and other marketable trees, bamboos and useless trees were to be thinned out and they were to be strictly protected, but the ordinary reserves were, under the restrictions named, to be open to the agricultural population, for the supply of their forest requirements.

The difficulty of this plan is, that the special reserves, as then contemplated, would be much too small to satisfy permanently the requirements of the country and of export trade in the matter of teak and other timber and products. But, if these special reserves are increased sufficiently to answer the purpose for which they were proposed, they will comprise a very large portion of what was intended to be formed into ordinary reserves. We should then have two kinds of demarcation lines, including two classes of forest placed under different rules, which would be extremely confusing to the people and would certainly lead to difficulties. As it is, the demarcation of the forest reserves introduces a new feature into the every-day life of large classes of the agricultural population, and all arrangements regarding it must be as plain and simple as possible.

And there are other difficulties besides in carrying out the plan so ably advocated by Mr. Baden-Powell. As proposed by him, the ordinary reserves would

comprise the bulk of the forest on the hills. It is quite out of the question to prohibit *toungya* cultivation without special permission over this extensive area, nor was this contemplated. In paragraph 108 Mr. Baden-Powell says the (Karen) villages may often be left inside the reserve with a suitable quantity of land all round them. Apparently then the intention was to demarcate *toungya* grounds for them. But it must not be imagined that the Karens will keep within the areas assigned to them for their *toungyas*, and the practical result will be that *toungya* cultivation will go on unchecked in the ordinary reserve, and that Part III of the proposed Rule 9 will remain a dead letter. It will be equally impossible to enforce Part II, which proposes to prohibit setting fire to the forest or negligently to allow fire to spread to the forest, over the wide area of the ordinary reserves. Except for purposes of trade it would not be advisable to enforce Part I which makes nineteen reserved trees, and Part VII which prohibits the collection of minor produce without permission in the ordinary reserves. It would produce a most harassing and vexatious interference with the inhabitants of the forests without any corresponding advantages, and ought never to be attempted. The practical result would be that the ordinary reserves would be reserves only in name, and under these circumstances it is best to be satisfied with one class of reserves, in which no *toungya* cultivation at all is permitted, and in which the work of fire-protection and improvement will progress gradually, as circumstances may permit. It is out of the question at the outset to decide which forests will eventually be most advantageous for intensive working; that must be decided by future experience. Under these circumstances, it appears necessary to abandon the plan of two classes of reserves in charge of the Forest Department. The present report, therefore, will deal with one class of reserves only, which will be on the footing of State forests, and the Burmese designation of which will be "*Asoya thittau.*"

The forests outside the reserves will in most respects be under the control of the Civil officers, teak alone remaining in charge of the Forest Department as at present, and they will be called "district forests." This arrangement has the advantage of being plain and simple, and readily understood by the people of the country. It is the same plan which has now for a considerable time been followed in other provinces of India, where it has answered the purpose, and been found readily manageable. It was the system, the gradual development of which was contemplated when the forest rules of 1865 were framed; its adoption in Burma has lately been advocated by several civil and forest officers of experience, and under the circumstances of the case it is the best system that can be devised at present. In the permanent reserves improvement must progress gradually, but steadily, and in a systematic manner. The Kwaymakine, Boben Choungwah, and several other reserves have already been taken in hand, and, as our experience and our means of supervision increase, other blocks will be taken in hand for fire protection and planting. But at this time to say which shall be the special reserves to be set apart for improvement and intensive working, and which shall remain ordinary reserves, is out of the question. One year's decision in this respect would be upset by the experience of the next five years; therefore it is best to demarcate one class of reserves, as has been done in most other provinces of India.

Provisions of forest rules regarding reserves.

4. Before proceeding further, it will be well briefly to explain the present state of the law, under which these reserves may be taken up. Two different sets of rules apply to the forests of the province. The rules of 1865 apply to the Government forests specified in clause 2 of those rules, and the rules sanctioned by the Government of India in November last may be made applicable to any other Government forests in the province. The rules of 1865 were issued under the Government Forest Act of that year, but their provisions not being covered by the powers given by that Act, they were specially legalised by Act VII of 1869, and, as regards the reserves, this legalisation was not affected by the provisions of Act XIII of 1873 which repeals Act VII of 1869, as far as it relates to duty on (foreign ?) timber. The rules sanctioned in

Extract from Clause 1 of Act VII of 1869.

"The rules shall be deemed to have had the force of law as regards all timber to which they purport to relate, and shall continue in force until the Governor-General in Council shall otherwise order."

November 1875 have been framed under Act VII of 1865, and are covered by its provisions.

Both sets of rules give the Chief Commissioner power to declare any portion of the Government forests as reserved. Under the rules of 1865, this is done by the act of demarcation in the manner prescribed by Rule XIV and by proclamation published in the villages adjoining the reserves. Under the rules of 1875, it is to be done by notification in the *British Burma Gazette*, which, however, cannot be issued until the boundaries have been marked off in the manner prescribed by Rule II, and until a statement has been prepared and approved by the Chief Commissioner under Rule III, shewing the privileges which villagers are allowed to enjoy and any customary rights which may belong to them.

The legal effect of demarcating a reserved forest is practically the same under both rules, *i.e.*, the reserves are absolutely at the disposal of Government as far as there are no adverse rights of other persons. The present report will, however, only deal with the old forest rules, for they apply to that portion of the Thayetmyo, Prome, and Tharrawaddy districts in which considerable progress has already been made with forest demarcation. It obviously is desirable, in the first instance, to complete the work in these districts, before commencing it elsewhere.

Outer line in Tharrawaddy, Prome, and Thayetmyo.

5. The following is the present state of the work. In the Thayetmyo, Prome, and Tharrawaddy districts, an outer line running along the foot of the hills has been agreed upon, and has been marked off on the ground from the frontier as far south as the Minhla river. This outer line it is intended to continue south as far as the boundary between the Henzada and Rangoon districts, and the forest situated between the outer line and the Yomah range it is intended to declare as a forest reserve under clauses 13—16 of the forest rules of 1865. The area is estimated at about 930 square miles. It is situated in three civil districts, Thayetmyo (125 square miles), Prome (225 square miles), Henzada (580 square miles). It is not intended to enforce all provisions of the rules in this area, but to limit their operation to the following matters:—

First.—To prohibit without the permission of the Forest Department all extension of permanent cultivation as well as all cutting of *toungyas*, except in the case of people residing within the outer line and in its immediate vicinity, who have hitherto been in the habit of cutting *toungyas* within the outer line.

Second.—To prohibit the cutting of all reserved trees or the collection of their produce for trade without the permission of the Conservator of Forests.

Thus the Karens and the few Yabines and Burmans who at present reside within the area or close to its boundary, and who have been in the habit of cutting *toungyas* within its limits, will continue to do so, but new settlers will not be admitted. On the other hand, the people residing inside and outside the reserve, who have been in the habit of providing themselves with bamboos, wood, and other forest produce from the area within these limits will continue to do so with the sole exception of the reserved trees, the cutting and using of which for purposes of trade, here, as elsewhere, will require special permission.

These forests therefore it is proposed to take up as reserves under the forest rules, and to issue the preliminary instructions prescribed in paragraph 3 of schedule I; but, as already explained, it is not intended to enforce the rules to their full extent, and the preliminary notification will not interfere with the cutting of gardens and *toungyas* by old residents.

Main object of the outer line.

6. This outer line was originally intended to define the ordinary reserves. Its maintenance in the manner here set forth is an experiment, the result of which must be awaited. The main object of the measure is to prevent immigration into these forests from the plains, of squatters who, on different occasions, have done great mischief by *toungya* cultivation in the best teak localities. Thus, in 1860, a large portion of the Shaboung forest in the Shwaylay district was destroyed* by an immi-

* See page 21 of report of 1868.

gration in large numbers of Burmese from the open plains near Poungday, and similar inroads of settlers from the plains have occurred since that time. It is, I understand, not the desire of Government to encourage the immigration of cultivators from the plains into the hills, in order to destroy the forests by *toungya* cutting; on the contrary, it is, I believe, the desire of Government gradually to diminish the practice of *toungya* cutting. The outer line, therefore, may be used in the manner indicated in order to give effect to the wishes of Government in this respect until the demarcation of the permanent reserves within and outside its boundaries has been completed. Experience must shew whether the demarcation of an outer line in other districts may hereafter be desirable. East of the Irrawaddy river the limits of the civil districts named coincide with the limits of the Prome and Tharrawaddy forest divisions, with one exception, the Zamayee forests north of the Kyouktaga belong to the Tharrawaddy civil district, though they form part of the Rangoon forest division. The demarcation work should certainly be extended as soon as possible to the Zamayee forests, which contain some of the most valuable teak-producing tracts in Pegu.

Permanent reserves outside the outer line.

7. With regard to the formation of permanent reserves in the Thayetmyo, Prome, and Henzada districts east of the river, it should be borne in mind, that outside the outer line are several important and extensive teak forests, the soil of which is for the most part unfit for permanent paddy-fields, and which must be reserved for the future requirements of the country and of export trade. In addition to these, it is necessary that a very much larger area of catechu forest than has hitherto been contemplated be reserved. Much has already been done in the selection and demarcation of these outer forests, of which the fuel reserves form a valuable portion. The completion of this task will be one of the most important and at the same time most difficult duties of the officers charged with the forest demarcation in these districts. The following is an approximate statement of the area demarcated and sanctioned outside the line referred to.

I.—*Thayetmyo district.*—

Cutch reserves, area, about 15 square miles.

II.—*Prome district.*—

Teak: *Daulay*, and *Kyoukatoung*, 6·7 square miles.

III.—*Henzada district.*—

Teak: *Thitcho*, *Kangyee*, about 8·2 square miles.

Fuel: *Choungnagoong*, *Tsatpoke*, *Thitkain*, and *Thindayo*, about 42·2 square miles.

Thus, the total area sanctioned in the plains amounts to about 71 square miles. Besides these, an area of about 27 square miles in three blocks have been proposed as fuel reserves in the Prome district, 35⅓ square miles of cutch reserves in three blocks in the Prome district, and 50 square miles of cutch reserves in Thayetmyo district in two blocks. To these should be added three valuable teak forests in the plains of the Tharrawaddy district, regarding which it may not be out of place to say a few words.

First.—The Touk-kyan choung forest, comprising a stretch of high ground between the Toun and Gamoong choungs, on both sides of the Touk-kyan choung, a feeder of the Gamoong, and below the villages of Wyne and Lepadau. Excluding a sufficient area in the vicinity of these two villages and some stretches of low ground suitable for paddy-fields, about 12 miles of excellent forest may be obtained here, a small part of which is *eng* forest, while the greater portion is well stocked with teak. This forest has already yielded large supplies of excellent teak timber, and is reported to be well stocked with second and third class trees.

Second.—The Shinthujoh forest, between the Gamoong and Kadet choungs east of the village of Myoung, bounded on the east by the outer line already adverted to. This forest is of small extent, probably not more than 5 square miles, and a good deal of it is *eng* forest, but the rest is well stocked both with second

and third class teak and cutch trees. The soil of the high ground proposed to be taken up is unfit for paddy cultivation.

Third.—The Hteindein choung forest, between the Minhla and Mokkha rivers, estimated to cover about 20 square miles. This was formerly one of the finest teak forests in the plains of the Tharrawaddy. When I first marched through it in 1856, on my way from Tsay-youa to Tsanjouay, it was a wilderness of stumps, and now it is reported to be well stocked with young teak.

If the formation of these suggested reserves is approved, their boundaries must be most carefully examined in detail. It will by no means be necessary to exclude *eng* forest; for, though most of that class of forest included within the outer line is of little value, the outer or western portions are full of *thitsee* and of fine *engyin* and *theya* timber. The extraction of *thitsee* in the vicinity of Myoung and Teinmyouk is only now beginning to be important, a number of settlers from Upper Burma (Shans and Burmans) having lately taken to it, but doubtless the extraction of this valuable product will increase largely, and it will be well to have reserves of *thitsee* trees included in the State forests.

Besides these forests there are numerous teak localities in the plains of the Prome district outside the outer line, such as the Shway Kyoondau, near Emmah, which should be carefully examined with the view of deciding whether they should be included within the reserves.

Reviewing these remarks, it will be seen that outside the outer line there are—

Sanctioned reserves, about.	71	square miles.
Proposed, but not sanctioned	112	do.
Now suggested	37	do.
Total about. . . .	220	do.

If altogether, including smaller areas, an aggregate of 250 square miles is sanctioned between the Irrawaddy river and the outer line in the Thayetmyo, Prome, and Henzada districts, we may be satisfied, and a glance at the map will shew that this will only be an insignificant proportion of the total area of those districts.

This limited area of forests proposed to be reserved in the plains will be of incalculable value, when the railway is opened, if properly protected and improved. Not teak only, but Pynkadoo and numerous other valuable kinds of timber can then be exported by land at sufficiently low cost, to make the operation remunerative, and in this way the demarcation of these reserves is necessary in order to secure an adequate supply of cutch from Pegu for the future. Catechu is not a substance likely to be supplanted by manufactured articles; the demand for it has, for some time past, been rising steadily, while the sources of supply are diminishing—hence the great increase in the price of this valuable product. The vicinity of well-managed and consequently well-stocked forests will be a great advantage to the open country to the west of them, for the time will come when that country is denuded and when the State forests will be most valuable to the agricultural population for grazing their buffaloes during the rains and autumn; for fire-wood, grass, and small building timber. The time will come ere long when the only regret felt will be that a larger area was not reserved as State forests in the plains. These reserves outside, as well as the permanent reserves within the outer line as far as there are no positive rights to the contrary, must be placed absolutely at the disposal of Government, and no *toungya* cultivation, except for the purpose of planting teak, must be permitted within their limits. It will, however, not be necessary to enforce the rights of Government in every respect; particularly with regard to these outer reserves, it may be well to state that it will probably be possible to grant extensive privileges to the villages in the vicinity. Forest pasture in Burma is generally exercised in the rains and autumn, when there is no risk of fire, and in these months buffaloes and cattle may well be permitted to graze in the forests. Again, for a long time to come, most of the forests in Burma will benefit by the cutting-out of bamboos and the inferior kinds of timber, and no harm is done by cutting

thatching grass. Whenever these articles are exported for sale they must, of course, be paid for; but for local requirements their use may for many years to come be granted free without detriment to the forest, provided fire protection and works of improvement are not interfered with. It will thus be possible to demarcate the area suggested for the production of teak, other timber, catechu, *thitsee*, fuel, and other forest produce outside the line without in any way interfering with the present requirements of the agricultural population in these districts. Indeed, a very much larger area might be taken up, and the result of it would be highly advantageous to the country at large, and to the inhabitants of those particular districts.

Forests within the outer line.

8. Next in importance to the settlement of the outer reserves is the selection and demarcation of the areas to be permanently reserved within the outer line. A number of special reserves have here already been demarcated; their area, however, is entirely insufficient. *Toungya* cultivation, particularly by the Karen population of the forests is here the great difficulty, and yet it is most desirable to retain the present Karen population in the forests, so as to secure their services for protection, working, and improvement. The organisation of a system under which these Karens may be retained in the forests, without destroying the teak by their *toungyas* is an exceedingly difficult task; but it is one that is worthy of great labour and trouble, and it must be accomplished. If we talk on the subject to the most efficient and experienced Burman foresters, who bring the timber from these forests to market, it will be found that they are unanimous in regarding the retention of the Karens in the forests as essential. In some cases the resident Karens are partners in these timber operations; in others they are employed to find the timber, to devise the best dragging paths, and in felling and lopping, in which they are very skilful. Their local knowledge of every nook and corner of these difficult forests is an indispensable condition of their successful working; and, as regards their improvement, Major Seaton's admirable success in inducing the Karens to plant teak in their *toungyas* shews conclusively that great progress can be made in increasing the proportion of growing teak in the forests through their agency, and at a comparatively small cost; but not in this respect only, in all our attempts to improve the forest, by protection from fire, by sowing teak where bamboo has flowered, by cutting creepers, thinning out or girdling useless trees, in all these operations will the aid of the Karens be indispensable. A few of them may at once take to permanent cultivation if money is given them for the purchase of cattle, either outside the hills, or inside in suitable places; but for the great mass of the Karen inhabitants of these hills, *toungya* cutting will, for several generations to come, remain their principal occupation. A plan, therefore, must be devised, by which a portion at least of them may be retained in the hills, without destroying the teak forests.

The reserves within the outer line how to be protected from *toungya* cutting.

9. Several plans have been suggested to secure this end, and they may conveniently be considered under the following heads:—

First—strict enforcement of the forest rules;
Second—allotment to the Karens of permanent *toungya* grounds;
Third—demarcation of the best teak localities as permanent reserves, and prohibition of all *toungyas* in these reserves.

Rules IX to XI of the forest rules provide all that is needful in this respect, and, if the provisions of these rules had been enforced in the Government forests, the present difficulty would not have arisen. But it is evident that, since 1862 at least, these rules have either not been enforced at all, or in an inefficient manner. *Toungyas* have been cut in the heart of the best teak localities, and nothing has been done to enforce the provision that cultivators must prevent the spread of *toungya* fires into teak localities. On this subject it will suffice to refer to paragraph 102 of Mr. Baden-Powell's report. Nevertheless, Government has full power now to enforce these rules within the limits of the Government forests, as defined in 1865. These rules were framed with full consideration to the interests of the hill tribes, and there would be no injustice in now declaring that henceforth they shall be strictly enforced. What was intended when the rules were framed, was that the Karens should settle in the extensive

tracts of these hills which are quite void of teak, and that thus the teak localities, which form the only valuable portion of these forests would be protected. It was also hoped that the Karens would, in some districts, gradually take to permanent paddy cultivation, which is by no means impossible in these hills. The valleys of Coorg, the Wynaad, the Konkan, and of other hilly districts of South India are occupied by flourishing paddy-fields, and in the vicinity of Rangoon the Shan settlers have made a commencement in utilising stretches of low ground between undulating hills for paddy cultivation. Moreover, there are many valleys in the heart of the Yomah hills, where traces of old paddy-fields exist, and where these old fields may with little trouble be reclaimed and extended. The change from the old practice of shifting clearings to the cultivation of permanent paddy-fields is one which requires time; for, in most cases, the Karens have not the means of purchasing cattle, and are not accustomed to work with them. But the change, when once brought about, will be felt as a great boon by the Karens themselves, for the crops reaped on *toungyas* are at best precarious, and seasons of scarcity are not uncommon among them. Perhaps it might be possible, by strictly enforcing the forest rules, and by giving advances for the purchase of cattle, gradually to induce the Karens to take to permanent paddy cultivation; but it would hardly do to build any forest system upon the plan of effecting this by strictly enforcing the forest rules in these hills, which has hitherto proved a failure.

Permanent reserves must be demarcated.

10. This being so, the two remaining alternatives already mentioned are left for discussion, and the question is, whether it will be preferable to allot *toungya* grounds to the Karens for permanent occupation, or whether the best teak localities and other valuable forests should now be selected and demarcated as permanent reserves, to be kept free of all *toungya* cultivation. I am decidedly of opinion that the last-named plan will be found more simple and more suitable.

Major Seaton, it is true, seems to have inclined towards the plan of assigning *toungya* grounds to the Karens in return for the teak planted by them in *toungyas*, but at the same time it is evident from the records of the Conservator's Office that he contemplated the formation of permanent reserves, to be protected from fire and to be improved, and that he intended that these reserves should comprise the places planted with teak by the Karens. In some cases it appears that Major Seaton went so far as to promise to the Karens certain defined tracts of land if they planted a certain area with teak. Major Seaton's action in this matter was, I understand, sanctioned by Government, and any specific promises made by him must, of course, be kept as far as the Karens have performed their part of the agreement. Should any teak localities or other valuable forests be included within the limits of these promised *toungya* grounds, they cannot, of course, be included within the permanent reserves, and in such cases it may be necessary to make a settlement with the Karens on the basis indicated and to assign to them certain demarcated tracts within which they shall confine their *toungya* clearings; but this does not do away with the necessity of demarcating permanent reserves in which *toungyas* shall not be cut under any circumstances, except under special permission and for the express purpose of cultivating teak; for, as long as the Karens continue to cut *toungyas*, it is most unlikely that they will ever keep within any limits that may be assigned to them. Bad harvest, increase of population, sickness, and superstitious fancies will, sooner or later, make them leave the tracts that were assigned to them. With or without permission they will cut their *toungyas* elsewhere, and it will not be possible to prevent this. The only safeguard lies in the demarcation of reserves, in which no *toungya* at all shall be permitted. As long as the Karens in these hills have no other mode of subsistence save this barbarous system of *toungyas*, nothing can, in my opinion, be done, except either strictly to enforce the forest rules, or to demarcate certain areas as permanent reserves in which no *toungyas* shall be cut. But every effort must be made to induce the Karens to form permanent settlements and to take to regular husbandry, and when that has been accomplished, a settlement may be made with them and defined areas of forest land may be abandoned to them. Meanwhile, no fresh promises of *toungya* grounds should on any account be made to the Karens.

11. It will also be necessary to prohibit all teak planting in *toungyas*, except in demarcated permanent reserves, such as the Kwaymakine reserve, the north part of which has, mainly through Tsaukai Moung Panlay's agency, been greatly improved by fairly well-stocked blocks of teak, which, ever since 1869, he has planted on his *toungyas*. This entire reserve is fire-traced, and the *toungya* teak plantations, which aggregate about 350 acres, are therefore protected with the rest of this valuable forest. But, besides these, I examined numerons plantations, aggregating several hundred acres, which are scattered all over the south Tharrawaddy forests, and are not at present included in any permanent reserve. Every one of these has to be fire-traced every year; and, if this system were to be extended further, it obviously would be impossible without unreasonable expense, to protect these numerous little plots against jungle fires. On the other hand, it would not in any way be justifiable to spend considerable sums on forming these plantations, and then to allow them to be burnt. It may be taken as granted that this was not what Major Seaton intended. He probably contemplated that these plantations should eventually be included within permanent reserves; but it is evident that the first step must be to form these reserves, and that only after measures have been taken to secure their protection against fire, a commencement may be made of planting teak within their limits.

No *toungya* teak plantations to be made, except in defined permanent reserves.

12. A few words must now be added regarding the Karen population within the limits indicated. Adding the Zamayee, the area of forests within the outer line in the Thayetmyo, Prome, and Tharrawaddy civil districts may be estimated as follows:—

Karen population within the outer line.

	Square miles.
Prome and Thayetmyo	350
Tharrawaddy	580
Zamayee	200
Total	1,130

This area comprises the best teak forests in British Burma, and a large extent besides of excellent forest of bamboo and trees of other kinds, which in course of time will become extremely valuable. But it also comprises a large extent of forest, which is perfectly valueless, and which never can be valuable for any purpose whatsoever. The good forest worth preserving does not probably comprise more than 600 square miles. It is necessary that as large a portion of the valuable forest as possible should be permanently reserved, and that these reserves should be protected and gradually improved. Even when this has been accomplished, they will for many years to come only be capable of furnishing a small portion of the present timber export from Rangoon and Moulmein. The Karen inhabitants of these hills are the only people whose interests are at present antagonistic to conservancy. Our object must be to give them the means of subsistence in the manner least injurious to the maintenance and improvement of the forests. In the Tharrawaddy forest division their numbers are reported as follows:—

	Tays.
Thoonzay	6
Beeling	5
Mokkha	3
Minhla	3
Htoo	6
Tounchoung	1
Boben	4
Tounyo	8
Shwaylay	4
Total	40

These forty *tays* (Karen hamlets) are estimated to contain about four hundred *dahs* or *toungya*-cutters, who are supposed to cut on an average five acres annually. In the Zamayee are ten *tays* with an estimated number of sixty-four

toungya-cutters. Thus we have in this portion of the Henzada civil district about 464 *dahs* or *toungya*-cutters, who may be estimated to cut annually an area of 2,320 acres * In the Prome hills inside the outer line the number of Karen *tays* is estimated at fifty, cutting, on the average, an area of 2,500 acres annually. The annual area cut may therefore be estimated as under 5,000 acres, which are required to maintain a total population of 5,000 souls, including women and children. Allowing for a rotation of twenty years, the maintenance of this population by *toungya*-cutting would require an area of 100,000 acres, or 156 square miles. If definite *toungya* grounds were allotted to them, the limits fixed would unavoidably include a large proportion of ground which, either on account of the steepness of the slope, or the poverty of the soil, is unfit for *toungya* cultivation, and therefore this small population would at least require 300 square miles in about 100 blocks of three square miles each. But if the task were attempted, to assign sufficient *toungya* grounds to each *tay*, not one would probably be satisfied with 1,920 acres; they would demand at least four times the area, and in most cases probably much more. The data here given are only approximate, and the strength and distribution of the Karen population on the different rivers must be most carefully enquired into in detail on the spot, before any final conclusion regarding the reserves to be demarcated in these hills can be formed. But the main facts will not be altered by this enquiry, and they are as follow. Of an area of about 1,130 square miles, with less than five souls to the square mile, the valuable forests which, as a rule, comprise the good *toungya* grounds, occupy about 600 square miles, and, of these 1,130 square miles, one-third at least must be left for the *toungyas* of the Karens. This clearly explains the difficulty of the task, as long as the Karens mainly rely on *toungyas* for their maintenance, and it will also sufficiently prove the urgent necessity for inducing them gradually to change their husbandry, and to take to a more settled and permanent system of cultivation.

So much, however, seems certain, that an attempt must be made at an early date to demarcate and permanently to reserve from *toungya* cultivation the best portions of the forests, as far as they are at present available. I suppose it is generally agreed that *toungya* cultivation confers no prescriptive right to the soil upon the person who has cut the forest, and has reaped his crop from the ashes. I assume that no hereditary rights to *toungya* grounds in these hills are acknowledged. If anything of the kind were recognised, there would hardly be a square mile of forest in these Yoma hills, which could not be claimed by some Karen family or other, provided they had taken the trouble to keep a record of the migrations of their ancestors. Of late years it is true some of the more civilised Tsaukais have confined their clearings to more limited areas; but it still happens every year that a *tay* moves from one side of the Yoma to the other, or from the Zamayee into the Yainway forests, and *vice versâ*. The theory of any occupancy rights being acquired by these erratic and temporary clearings of the forest is quite untenable, and is, I trust, considered to be so. The principle therefore to follow in demarcating reserves in these hills is to take up all valuable forest tracts, provided no actual settlements are included, that is, no mulberry or other gardens or orchards actually occupied, or no *tcungya* that has already been cut, or from which the crop has not yet been reaped. Deserted *toungyas* and *toungya poonzohs* may be taken up without prejudice to any one. It is obvious that the demarcation of every reserve must be preceded by a careful examination of the existing *toungya* grounds, and in cases where Major Seaton gave any promises to assign definite *toungya* grounds, a special and detailed report must be submitted for the Conservator's orders before any lands included in such promises are included within the demarcated reserve. This report should state precisely what the Karens have done to fulfil their part of the agreement.

What forests should be demarcated as reserves within the outer line.

13. These remarks will have made it clear that it will not be an easy task to select and demarcate a large area of valuable teak-producing forest within the outer line. In the report of 1868, which sketched the plan according to which the forests should be worked during the ensuing five years, it was proposed that only those forests should be selected for demarcation as reserves

* I have seen the Karen population in the hills of the Henzada district estimated at 1,084 families, with 7,000 persons; but this probably included tracts not comprised within the limits here stated.

which are really valuable; and it was explained that the value of a forest depends upon the following circumstances: *first*, its extent; *second*, its situation, offering more or less facilities for the export of timber; *third*, the tendency of the teak to form regular or irregular stems; *fourth*, the rate of growth; *fifth*, the quantity of teak growing upon a certain area (page 13). It was then intended that in the hills such forests only should be demarcated as are in the vicinity of good floating streams; but since 1868, eight years of incessant *toungya* cutting have elapsed, and the area of good forest now available for demarcation is much less than it was at that time. Within the limits to which the present remarks relate, therefore, we must demarcate good forest wherever we can obtain it in compact blocks of sufficient size to make its protection and management possible, leaving in every forest district, but outside the reserves areas amply sufficient for the requirements of the Karens. If the demarcation is conducted according to these principles, it may be possible to secure an aggregate area of reserves within the limits specified of 600 square miles. This, together with the forests outside the line, will give an area of 850 square miles between the Irrawaddy river and the Yoma range, including the Zamayee. If the demarcation staff succeed in obtaining this area, it will be an excellent beginning, but I doubt whether it will be accomplished. The total area within which these blocks are proposed to be demarcated may be put down at 6,500 square miles, *viz.*, 1,130 square miles in the hills, of which about one-half is proposed to be included, and 5,370 square miles in the plains, of which it is proposed to reserve less than five per cent. After laying down the outer line and taking the needful measures to prevent squatters coming from outside and cutting *toungyas* within the line, the demarcation staff should in the first instance devote its entire strength to the selection and final demarcation of the reserves outside the outer line, proceeding in their work from south to north, and when this has been accomplished, they should then take up the hills inside the line.

Boundaries of reserves.

14. It is essential that the boundaries of all permanent reserves should, where no natural boundaries exist, be demarcated in a permanent and unmistakeable manner. This is prescribed by the rules, and it is particularly necessary for the sake of the population in the vicinity. But the forest boundary question in Burma has not yet been solved, and it is a subject regarding which much more experience must be collected than is available at present. A continuous line of broad, flat, smooth marks cut into the heart-wood of all heart-wood trees above a certain girth standing along the line, the lower edge smooth and slanting downwards, stamped with "V R" or any other suitable mark, and at regular intervals (the forest rules prescribe 200 yards), boards with a suitable inscription in Burmese and the current number, nailed to sound and straight trees at ten to fifteen feet above the ground, is a good line to begin with. It is essential that there should be a conspicuous boundary mark, wherever a path or road enters the reserve. But it is necessary—and, indeed, prescribed by the forest rules—to connect the boundary marks by a continuous path. I would suggest to begin (as the forest rules prescribe) with a narrow path, which will be overshadowed by the forest left standing on both sides, and which can be kept clear easier than a broad clearance. This path should, on level or undulating ground, be broad enough for carts, say eight feet wide. It should run straight for as long distances as possible, all trees should be felled or girdled, and the stumps should gradually be destroyed by firing them once a year. Nothing clears a path better than using it to drag timber along it, and in many cases it may be useful to drag the felled timber along the path, and use it to cross stretches of low ground. Where cart traffic is at all likely to follow the boundary path, some trouble should be taken to make ravines passable by a detour. These boundary roads cannot be made in one season; they will be the result of many years' patient and gradual work. Some of the village roads which have of late years been cleared through the forest in the Tharawaddy district furnish an instance of what these boundary lines may eventually be like.

These remarks only relate to the ordinary demarcation lines. When the work of improvement, and, as the first step, fire conservancy, is taken in hand in any reserve, the work assumes a different shape. It then will be necessary to

have a broader cleared line on which the grass dries sooner than in the adjoining forest, and which can therefore be burnt at an earlier date. The question of fire-lines, however, it is not intended to discuss here; suffice it to repeat what has already been stated above, that planting, whether on Karen *toungyas* or elsewhere, as well as other work of improvement, should only be undertaken in those reserves which have for some time past been successfully protected from fire, and which it seems reasonable to expect can be protected regularly.

Work to be done by demarcation staff

15. A few words should now be said concerning the work to be done by the officers of the demarcating staff. It has already been agreed, in accordance with the orders of the Government of India, to form a special staff of forest and civil officers for the work of demarcation in Burma, and, without the employment of special officers who are relieved of all current work, the task here sketched could not at all be accomplished. Indeed, the slow progress which has been made since 1864, when it was decided to take in hand the demarcation of forest reserves on a large scale, may mainly be attributed to the fact that neither forest nor district officers could spare the needful time from their current duties. Past experience has shewn this sufficiently, but now a special demarcation staff has been formed, and the forest officers attached to this staff will do the preliminary and professional work of examining the forests, while the demarcation of the reserves and the settlement of forest rights will rest with the civil officer. With these arrangements steady progress may confidently be expected How long it will take to complete that portion of the work which is the subject of the present report, must depend on the strength of the staff which may be employed. Until the work has advanced near completion, I would not suggest that demarcation work in any other division should be taken in hand. Before any reserve is handed over by the demarcation staff to the divisional forest officer, the following work must be accomplished. The boundary line must have been formed and the proclamation issued in the nearest villages, as prescribed by Rule XIV; this requires the Chief Commissioner's previous sanction, and though this is not prescribed by the rules, it will be convenient that the reserve be notified in the *British Burma Gazette* by the Chief Commissioner's orders declaring the forest to be a reserve under the rules. Schedule I prescribes the procedure in setting apart reserved forests. This schedule may be modified by the Chief Commissioner; but, as it stands at present, the Chief Commissioner's sanction is given upon the basis of a report containing full particulars regarding the tract, and a map shewing the exact situation of the tract. Copies of these documents should be deposited in the divisional forest office when the reserve is handed over. The question, however, arises, whether more shall not be done by the demarcation staff. The report submitted to the Chief Commissioner is evidently intended to be of a general nature, to explain why the reserve is proposed, to state whether and how far the surrounding villages are affected by the boundaries selected, but it is not intended to give a professional description of the forest, and the map is, to judge from the scale suggested, merely to be a general map of the district shewing the situation of the forest.

The forest officers of the demarcation staff, however, must carefully examine every reserve, the demarcation of which they propose; and, indeed, paragraph 1 of Schedule I implies that they are to satisfy themselves that the forest is worth reserving, by making a valuation survey of it. It undoubtedly seems most desirable that a record be kept of their examination of the forest, and the forest officers employed upon this work should draw up a descriptive account of the reserve, either as a whole or separately, of such natural blocks as may readily present themselves. They should at the same time record their views regarding the treatment of the reserve, whether fire protection or plantations should be attempted, whether permission should be given to cut out other trees and bamboos, and the like. It is not intended, that the demarcation staff should frame working plans of each reserve (that is not their duty), but they should indicate the general principles which should guide the treatment of the forest. It will also be a good plan to prepare a more detailed map of the forest than is contemplated in schedule I of the rules, and the data for this may be obtained by a circumference survey of the boundaries.

The preparation of a detailed statement of forest rights, with which a reserve may be burdened, and of privileges which may be allowed in it, has been pre-

scribed by the Government of India for all reserves; and the new Burma rules, which are intended to be made applicable to all forests not included in the notification of 1865, prescribe the approval by the Chief Commissioner of such a statement previous to the declaration of any reserved forest. The statement in question must eventually be prepared, and it will further on be shewn what steps are proposed for the definition and settlement of forest rights in these reserves; but it would not do in the present case to require that this statement should be sanctioned previous to the proclamation of any reserve. This would delay final demarcation for several years, and would unnecessarily increase the difficulties of the case.

Girdling operations.

16. I am of opinion that, in connection with the treatment of the forests, definite proposals should be made by the forest officers of the demarcation staff regarding the girdling operations to be conducted in the reserves. These operations have been suspended for the present, so as to leave the department free to attend to the urgent work of demarcation. It is not here intended to discuss the plan which should regulate these operations in future. So much, however, may be said, that each reserve must in this respect be dealt with on its own merits, and that the number of trees to be girdled in it must entirely depend on the requirements of the forest with which it is stocked. I will endeavour to illustrate my meaning by a few remarks concerning the Kwaymakine reserve. This has now been protected from fire since 1871, and as a consequence the general condition of the forest has improved considerably. What is here required is to increase the proportion of teak growing in it. An excellent commencement has been made in this respect by Major Seaton, by planting up 144 acres in the corner near Kwaymakine, and by planting 350 acres in *toungyas* in the northern part. The *toungya* plantations should be continued, and, besides these, the main work required to be done is the removal of bamboos and other kinds of trees. Fortunately, the forest is conveniently situated for export, and the demand for bamboos and other trees besides teak will probably be sufficient to ensure even a revenue from this source. The first step will be to divide the reserve into a number of blocks, the boundaries of these blocks being laid along ridges and old paths, the object of the blocks being mainly to divide the forest into manageable sub-divisions. One block after the other may then be opened for the export of bamboos and all other timber besides teak, care being taken not to allow any work after the 1st February, on account of the fires. After some time it may be found advisable to open a second block, and thus in succession to work the entire reserve, allowing bamboos and trees other than teak to be removed. The result of this doubtless will be the springing-up of an abundant crop of teak seedlings, which at present are excluded by the shade, and the reproduction of teak may then be further increased by girdling a number of mature teak trees, leaving a sufficient proportion of the younger trees standing for seed. In other reserves it may be desirable at once to girdle a proportion of the mature teak. As a rule, and in the plains and the outer hill forests always, the forest operations suggested by the officers of the demarcation staff should be carried out by the divisional forest officer or his assistants. But cases are conceivable, especially in the more remote hills of the Zamayee, which are difficult of access, in which girdling operations may, with advantage, be undertaken in behalf of the divisional officer under the supervision of the forest officers attached to the demarcation staff.

Definition of the rights and privileges of the agricultural population in the vicinity of the reserves.

17. In the case of most reserves it will be possible so to arrange the boundaries as to leave a sufficient area of forest open for the agricultural population in the vicinity, to supply themselves with all the wood, bamboos, grass, grazing and other forest produce which they may require for home consumption. But this will not be the case everywhere, and in many reserves it will be necessary to set apart certain blocks, and in these blocks to assign to the existing agricultural population certain definite rights. As a rule, these rights will be assigned to the blocks of paddy-fields (*kwins*), so that the occupants of each block of fields may exercise definite forest rights within a defined area of State forest. These rights, however, will only furnish forest produce for home consumption and not for sale. New paddy-fields, which are opened out after the demarcation of the reserve has been completed, will not participate

in these rights in the State forests. It must be provided by special legislation that after a forest has been demarcated no fresh rights of user or easement shall accrue or be acquired in it, and the demarcating officers must record in detail the present state of the population in the vicinity of the forests, and prepare a register of the *kwins*, the occupants of which are in the habit of providing themselves with timber, wood, bamboos, grass, pasture and forest produce from the reserve. This record will be required for reference at the final settlement of the claims, which may be raised against the demarcation of the reserves. The settlement of rights adverted to must, in the first instance, be made by the demarcating officer, but ample time and opportunity must be given to the people to appeal against his decision, and arrangements must be made for the enquiry into these appeals and their final decision, either by the ordinary tribunals, or on the spot by a special commission.

The rights which require here to be considered are of two classes; to the first class belong rights of way, occupancy, and proprietary rights. These rights have nothing peculiar in them, and cases arising out of the claims for such rights may, if considered desirable, be dealt with by the courts, which have ordinary jurisdiction in these matters. Such claims, however, will be very rare. Fields or deserted fields on which occupancy or proprietary rights exist should, as a rule, not be included within reserves, and in the case of rights of way, the procedure will ordinarily be as follows. Roads, straight in the plains, and following the configuration of the ground in the hills, will be cleared through the forest, so as to connect all neighbouring villages; indeed, a system of roads and paths through the forest so selected as to be used by the traffic of the country and afterwards to serve as fire-paths, is one of the first measures of improvement to be taken in hand in these reserves. To the other class belong all rights of user to wood, bamboos, grass, and the pasture of cattle. These rights cannot usefully be dealt with by the civil courts, but must be enquired into, and decided on the spot by a special commission.

The forest rules of 1865 make no provision for these matters; they were based upon the assumption that it would be possible, from the great mass of excess forest and waste, to set apart reserves, to be at the absolute disposal of the State, without interfering with the rights of the people. Since then, however, circumstances have changed, cultivation has increased, and the summary procedure then contemplated will no longer be applicable in all cases. The principles on which forest rights shall be dealt with must be laid down by fresh legislation, and it will not, therefore, be possible in this report to do more than to discuss the question in a general way.

In the preceding remarks the words "demarcation staff" have been used. This staff will consist of a number of forest officers specially selected for this work, who will, after examination of the forest on the spot, prepare the needful proposals for demarcation and the settlement of forest rights. The acceptance or rejection of these proposals, however, will rest with a civil officer, at present an officer specially selected, who represents the Deputy Commissioner of the district. He should be styled the demarcating officer, for the responsibility of the demarcation must entirely rest with him. The forest officers of the demarcation staff should, as a rule, precede him, and thoroughly examine the forest in question and the country around beforehand, so as to be ready with their proposals by the time he arrives. The demarcating officer should be required to record his proceedings, to communicate them to the forest officers associated with him in this work, to give due consideration to, and to record, all objections which may be raised against them by the forest officers. But both the demarcation and the preliminary settlement of forest rights must be done by him, and the responsibility of the proceeding must rest entirely with him. Upon his report, submitted through the Commissioner of the Division and the Conservator of Forests, the Chief Commissioner will pass his orders, approving of the proposals or otherwise; this reserve will then be notified in the *Gazette;* it will be finally demarcated, and the needful proclamation will be issued according to Rule XIV. Regarding the measures which should then be taken to obtain a final settlement of forest rights, I would offer the following suggestions; a period of eighteen months should be permitted from the date of proclamation for the reception of claims and objections, and it should be provided that no claim will be received after the expiration of that period.

All claims and objections in this matter should, in the ordinary course of business, be submitted to the Deputy Commissioner, who will pass orders in any cases which may appear to require immediate action, but will reserve the settlement of all questions of a permanent character; these should be enquired into on the spot, and finally decided by a commission of three officers, of which the demarcating officer and a forest officer should ordinarily be members, while the Chief Commissioner would appoint a third officer as President. After the demarcation and preliminary settlement of forest rights has been completed in any district, and in the present case probably after the entire work suggested has been completed between the frontier and the southern boundary of the Henzada district, and after the needful time for the reception of claims and objections has elapsed, this Commission should commence their work, and should march through the entire length of the district, taking up in the course of their progress all petitions and other communications which were duly presented on the subject to the Deputy Commissioner within the time specified. They should however be prohibited, without the Chief Commissioner's special sanction, to receive any claims not submitted in due time to the Deputy Commissioner. The decision of this Commission must be final, and I am inclined to suggest that their authority should apply to all claims and objections arising but of the demarcation of the reserves, and should include claims to rights of way and to proprietary or occupancy rights to land within the reserves. They should have the power to award compensation for land included within the reserves, in which proprietary or occupancy rights have been proved, as well as compensation for any right of way which it may be deemed necessary to interfere with, and they should have power to commute any rights of user or easement which may have been admitted by the demarcating officer or established before the Commission, by the grant of land or by a money payment.

If these suggestions are adopted, the interests of the people in the vicinity of the reserve will receive full consideration: the first enquiry into their requirements will be made by the demarcating officer, aided by the Forest officers of the demarcation staff, and, after ample time has been given for the people to understand the boundaries of the reserve and the restrictions imposed regarding it, a special Commission will follow, and will on the spot enquire into all complaints that may have arisen, with full powers to order such just and equitable arrangements to be made, as the requirements of each case may demand.

It may be objected that this suggestion sets in motion a much larger machinery than the importance of the questions at issue demand; but surely the questions at issue are of the greatest importance. It is imperatively necessary to demarcate as permanent reserves a large area of teak-producing and otherwise valuable forest, and it is equally necessary that this should be done in such a manner as to interfere as little as possible with the well-being of the existing population. This can only be attained by a careful and detailed enquiry on the spot into all circumstances of the case. The people ought to see with their own eyes that every effort is being made to effect this forest settlement with due regard to their interests, and this can, under the circumstances of the case, be most readily effected in the manner now suggested.

CHAPTER II.

ON DISTRICT FORESTS AND RESERVED TREES.

Rights of Government in the forests generally.

18. After the conquest of Pegu, by notification of the 26th September 1853, all forests in the province were declared the property of Government, and teak was at the same time declared a reserved tree. But even without this notification it is certain that all unalienated forest land in Pegu, and equally so all unalienated forest land in all other parts of British Burma, is, with all the products growing upon it, the absolute property of Government, subject to such prescriptive rights as may have been acquired by the agricultural population in the vicinity of the forests. This

right of Government is proved sufficiently, if proof be needed, by the grants made some years ago under the Waste-Land Grant Rules, under which large areas of waste and forest have been disposed of without reservation. The forest rules of 1865 only relate to the Government forests specified in those rules, and the new rules, which were sanctioned by the Government of India in November 1875, will, when promulgated, relate to such forests only as may be included within certain limits specified by notification.

Mr. Baden-Powell in his report on the forest system of British Burma, proposed that the Burma forest rules should be made applicable to all forest land, and land taken up for forest purposes, which had not been disposed of by lawful and valid grant or sale to private persons; and justly urged in support of his views that in the interests of the country the forest growth outside the limits of the Government forests, as defined in the forest rules, necessarily demanded protection. Such a formal declaration, however, cannot be issued without fresh legislation; and meanwhile we must base our action in those parts of the country to which the forest rules do not apply, upon the undoubted rights of Government to all unalienated forest and waste throughout the country.

In addition to teak, 14 other kinds of timber have now been reserved under Rule XII of the Forest Rules of 1865, *viz.*:—

Thitkado and *thitka* by notification of 2nd June 1873, and *thingan, thitsee, kokoh, pynkadoe, padouk, anan, engyin, theya, eng, pymmah, kanyin, sha,* by notification of 1st January 1876. For convenient reference copies of these notifications are appended to this report.

Definition of District Forests.

19. It should now be explained what forests may be comprised under the name of district forests. After the demarcation of the reserves has been completed, this will be a simple matter; the forests demarcated as reserves will be State forests, and those not included within these limits will be styled district forests. It should, however, here be mentioned that other forests besides State forests may eventually be demarcated in Burma. In the open and forestless parts of the country, such as portions of the Irrawaddy valley and delta, an attempt might be made to preserve scrub and jungle on high ground or elsewhere where the land is not fit for paddy. In such localities the formation and protection of village forests would probably be a popular move among the agricultural population. These woodlands should be demarcated and efficiently protected. No *toungya* or other cultivation should be permitted in them, but they should be maintained to furnish fuel and grazing, shade and shelter to the village cattle. Government should retain full proprietary rights over these woodlands, and should, in the interests of the people, control their management, but otherwise they would be in the position of communal forests, their produce would be shared by the villagers, and they would be free to them for pasture as far as such would be compatible with their proper maintenance. The value of woodlands for fuel, pasture and shade is, I believe, fully appreciated by the agricultural population of the delta, and any action of Government tending to preserve these woodlands from destruction would be hailed as a great boon. If this matter is properly taken in hand, Burma may yet be the first province of India in which an attempt at the formation of village forests for the benefit of the agricultural population on a large scale is made. It would probably in many cases not be possible to assign a separate forest block to each village; the woodlands of several villages would often have to be joined together, so as to form compact blocks sufficiently large for efficient protection and management. Any outlay incurred on their protection and management might be covered by the sale of produce to more distant villages whose inhabitants have no rights in these woodlands, or for export to other parts of the country.

These remarks will have explained that forests not included within State and village forests will be called district forests, and these district forests should eventually be entirely in charge of the civil district officers, assisted whenever needful by the officers of the Forest Department. But demarcation has not yet been completed in any single district, and in most districts it has not even been commenced. Under these circumstances no general proposals for the management of district forests can yet be submitted, for they have not yet been separated from the reserves. It must therefore suffice briefly to explain

my views in a general way on this subject. The following remarks only relate to Pegu and Tenasserim, not to Arracan.

Free permits.

20. It is, I suppose, agreed that outside the demarcated reserves (State or village forests) no interference, for the sake of forest conservancy, shall be attempted with the extension of cultivation or *toungya* cutting, with one exception that teak must not be cut or burnt or injured without permission. It is also, I suppose, agreed that the agricultural population in the vicinity of the forests shall have the free use, outside the reserves, of grass, pasture, bamboos and timber of any kind except teak. In the case of the reserved trees enumerated above it has been decided that free permits shall be given for local use. These free permits should throughout the country, except in the demarcated reserves, be granted by the civil officers, and I understand that it has been proposed that this duty shall devolve upon the Extra Assistant Commissioners in charge of townships. It would be an advantage if the counterfoils of all free permits could be sent to the divisional forest officer. I suppose, however, that no free permits will be needed to cut any of the reserved kinds for the purpose of cultivation, *toungya* or permanent. It is true that this will lead to the anomaly that a man must take out a permit for a couple of house-posts or for a bed-stead of *sha* or *pynkadoe*, while he may cut or burn any number of trees of the same kind on his *toungya*. This anomaly, however, is unavoidable. It may be considered whether in certain districts free permits for reserved timbers may not be dispensed with. Thus, within the outer line mentioned in the first part of this report, the Conservator, with whom the grant of free permits would rest, will do well not to trouble the people residing inside and outside in the immed ate vicinity of the line by requiring them to take out free permits for reserved kinds. The use of teak, of course, must continue to be strictly prohibited, but within the outer line at least, that is in the forest part of the country, the local consumption of all other kinds should remain perfectly free and unfettered. The attempt to introduce the system of free permits in these parts would lead to endless worry and harassing interference with the people without securing any corresponding advantages.

Trade permits

21. In the case of permits taken out for purposes of trade, I would suggest two classes: Permits for making charcoal and cutch, and for the collection of *thitsee* and wood oil should be granted by the Deputy Commissioner, or by any subordinate officer whom he may authorise in that behalf, the counterfoil of each permit being sent to the divisional forest officer for information. Those permits, if for purposes of trade, would be granted on payment; they should be good for one season only, and apply to a defined tract of forest. In the case of wood-oil or *thitsee* I would not insist on any conditions regarding the mode of tapping, number or size of incisions, application of fire, and the like. Such conditions will increase the harassing interference of subordinates and will do more harm than good. It seems to me quite sufficient to begin by requiring a permit to be taken out for the collection of a forest produce which formerly was free to any one who chose to go into the forest.

The second class of trade permits relates to timber of the reserved kinds. The payment to be made for trade permits will consist of two portions, *first* a fee paid before the tree is felled; and *second*, a rate per log or ton before the timber is permitted to pass certain revenue stations. For the cutting of *thitsee*, *kanyin* and *sha* no trade permits at all should be issued as a rule, for it is desirable not to encourage the cutting of those kinds on a large scale. For local use civil officers would of course be at liberty to issue free permits for these, as for other reserved kinds. Nor should trade permits, as a rule, be issued for *padouk*, *anan*, *thitkado* and *thitka*. These woods command a high price in the market, their supply is limited, and it is intended only to cut and export them from the forests on account of Government. There remain the following seven kinds which are generally used, and for which trade permits should be issued:—

1. *Eng*, } the most commonly used woods for house-building and
2. *Pymma*, } other purposes.
3. *Engyin*, } strong, hard, heavy and durable woods, associated in the
4. *Theya*, } forest with *eng*, but less common.

5. *Thingan*, the most valuable of these woods, used for boat-building and exported largely. A higher price should be placed on this wood than is mentioned in the notification.

6. *Kokoh*, } These are mainly used for cartwheels, oil-presses, and the
7. *Pynkadoe.* } like, and to a small extent for house-building.

Free permits for these seven kinds, as for all the others, will be granted by civil officers, but trade permits should, for the present at least, be granted by the divisional forest officer, counterfoils of all trade permits being sent to the Deputy Commissioner of the district.

This arrangement will leave the control of the timber trade entirely in the hands of the Forest Department, which will simplify matters and will be an advantage, as the Forest Department must have the control of the revenue stations where the second portion of the purchase money for the timber is paid.

Undersized timber.

22. The question arises, whether the cutting of all or of certain reserved kinds below a certain size should be prohibited.

The Revenue Committee of July 1873 proposed to prohibit absolutely the felling of undersized trees of six kinds, *viz.*, 1. *Pynkadoe*, 2 *pymma*, 3 *thingan*, 4 *theya*, 5 *engyin*, 6 *eng*,—except when they are cut down in clearing ground *bonâ fide* for the purpose of cultivation. This provision may eventually become necessary in certain districts, but I would not advocate its adoption at present. It must be remembered that the reservation of a large number of trees in addition to teak in Burma is a new measure, which, doubtless, especially in the wilder parts of the country, will give rise to much misconception and oppression by subordinate officials. I would therefore commence with as few restrictions as possible, and would not ask any questions concerning the size of the trees cut.

Custody of Teak

23. The custody of teak throughout the province should, in my opinion, remain with the Forest Department until the demarcation of the reserves is finally completed. But in those districts in which it is not intended to demarcate any reserves, the control of the teak generally, as well as the issue of trade permits for other reserved kinds may some time hence be transferred to the Deputy Commissioner. This transfer must not however lead to any relaxation in the protection of teak, which has been most beneficial. On my late tour I have noticed numerous stretches of high ground in the lower part of the Tharrawaddy district, surrounded by paddy fields on all sides, which would have become denuded had it not been for the protection of teak, but which now constitute small forests with a large proportion of teak, and a small proportion of other kinds. These belts are much too small to be turned into State forest reserves, but as village forests they will some day be of the greatest value to the people. They will furnish grass and shade, and by the time that the permanent reserves have been finally formed, and all questions of rights and privileges regarding them have been settled, it will, we trust, be possible to remove some of the restrictions on the cutting and use of teak timber which are still necessary at the present time. By that time it may perhaps be deemed advisable to permit the adjoining villages to use these woodlands as communal forests on condition of their protecting and improving them, and to permit the people under certain conditions to supply themselves from them with teak for their own use. To make such measures possible eventually, it will be necessary for the present to continue existing restrictions on the cutting of teak.

The receipts and expenditure on account of the district forests will, of course, appear in the accounts of the Forest Department, and the forest accounts of each district should be sent to the Conservator every month. This is the practice which obtains in the Central Provinces and elsewhere.

Proposed protection of other articles of forest produce.

24. It may not be out of place here to mention a few articles of forest produce which have of late years become scarce in some parts of the forests. The leaves of the Mhayaben (*Cordia sp.*), which furnish the best covering leaf for Burmese cheroots, were formerly brought to Rangoon in large quantities from the Magayee and other Hline forests; now the nearest sources are the Minhla and Gamoong forests, whence large quantities of these leaves are annually export-

ed. They are collected in the most destructive manner; trees are lopped and felled to get a crop of leaves, and the supply cannot last long. In the same manner the more valuable kinds of Show, the Red Show (*Sterculia villosa*) the Yellow (*Sterculia ornata*), and the White (*Sterculia fœtida*) may eventually become scarce, because the trees, young and old, are cut indiscriminately to get the bark. Such produce however cannot be protected in the district forests; these are articles of considerable value and little weight or bulk, which can readily be exported, path or no path, in any direction. The only plan to husband the supply of these articles, and similar articles of forest produce, will be to prohibit their collection in certain reserves, and indeed the forest resources of the country will here, as in other parts of India, be husbanded much more effectively, and in a manner less harassing to the people, by the demarcation, protection and improvement of the reserves, than by any measures taken for the better management of the district forests.

CHAPTER III.

ON THE ORGANISATION OF THE DEPARTMENT.

Local subordinate forest establishment.

25. Since Mr. Baden-Powell wrote his able report in 1873, and in consequence mainly of the suggestions made by him, the subordinate forest establishment has been considerably strengthened. The new scale of local forest establishments has been in force since the commencement of the current official year. Its distribution is similar to that formerly existing. The forests on each stream are in charge of a forester or forest-guard, with that difference that the pay of these men, of whom 44, *viz.* :—

		Rs.
10	Foresters on	20
10	Ditto	15
10	Forest-guards on	14
14	Ditto	12

are sanctioned, was formerly Rs. 10 per mensem, and now ranges from Rs. 12 to Rs. 20. Over these protective officers, are 35 superior officers, *viz.*, 18 forest rangers on rates of pay ranging from Rs. 150 to 50, and 17 foresters on Rs. 40 to 25. These have charge of groups of streams, or of sub-divisions of a forest division, and some have charge of special works.

While the demarcation of the reserves is in progress, the distribution of these local officers must necessarily be somewhat uncertain; but if the proposals of the present report are accepted to concentrate for the next few years the work of demarcation entirely upon the Prome and Tharrawaddy forest divisions and the Zamayee forests of the Rangoon division (Thayetmyo, Prome and Henzada civil districts), it will be possible to arrange a good distribution for the other divisions, which need not be disturbed until the work of demarcation is taken in hand in these also. There is now a large proportion of better-paid appointments, and there ought now to be no difficulty, under a careful system of selection and promotion, to secure the services of really good men for this important branch of the Service. It must be remembered that native foresters and forest rangers here in Burma more than anywhere in India will constitute the main strength of the Forest Department. The secret of success is of course to have well-defined local charges and a clearly understood range of duties. The completion of the demarcation work in any division will necessarily alter the distribution of the local establishments, for, as a rule, reserves or groups of reserves, not streams, will then be the local sub-divisions, and in the case of those reserves which are now under fire protection, and where the work of improvement is progressing, such as Kwaymakine and Bauben, it will be well at once to place a forester or forest-guard in special charge.

Demarcation staff.

26. Regarding the superior staff of the Department, the great step in progress made has been the establishment of a separate staff of forest officers for the demarcation of reserves. This staff at present only consists of two Assistant Conservators, but it must be increased considerably to enable it to do justice to the work sketched in the first part of this report. It should form a distinct

branch of the Department, and should eventually be placed under a Superintendent, who should be an officer of standing but subordinate to the Conservator. Except for inefficiency or misconduct, the officers serving on the demarcation staff should not be transferred to divisional or other work of the Department. On the other hand, no officer should be attached to the demarcation staff who has not passed in Burmese.

When passing orders on Mr. Baden-Powell's report, the Government of India said (paragraph 12 of No. 802, dated the 28th July 1874), "the necessity of a topographical survey of the demarcated reserves is fully recognised and it is intended, as soon as demarcation has progressed sufficiently and as soon as the work now in hand in North-Western India is completed, to transfer the forest Survey Department to Burma, to undertake the preparation of the needful maps of the reserves." It was then supposed that the work of demarcation had advanced more than it really had. From the remarks submitted in the first chapter of this report it will be clear that a series of years must elapse before the boundaries of the reserves in the one part of the country referred to are finally laid down. Moreover, at this present time, *toungya* cultivation, not for the purpose of raising teak, is permitted with few exceptions in all reserves hitherto demarcated. The Government of India, in their orders of the 21st August last, justly said that the large outlay required for a professional forest survey could not be incurred for the survey of forests which are not finally demarcated and completely protected, and that such a survey could not be sanctioned of any forests in which it was intended to permit *toungya* cultivation save for the purpose of raising teak. It is obvious that a series of years must elapse before the Forest Survey Department can usefully commence work in Burma. Yet it will be well to prepare for that time, and the best plan will probably be, if such can be effected, to transfer one or two junior officers who have been trained in the Forest Survey Department to Burma, to become acquainted with the country, and after having passed in the language and served for some time in a division, to be posted to the demarcation staff. The professional survey of the reserves may then be taken in hand gradually, as opportunity occurred.

Forest Divisions.

27. It will now be well briefly to review the Forest divisions which should be formed or maintained under the control of the Conservator of Forests, and the strength of officers required.

1. Demarcation staff, 2 Deputy Conservators, and 3 Assistant Conservators.
2. Timber depôt, Agency office and Rangoon forest division, 1 Deputy Conservator, 1 Assistant Conservator.

As long as demarcation is not commenced in this division, except in the Zamayee, one officer can attend to the forests and to the work at Rangoon. His assistant will be stationed at Magayee, where teak and other plantations must be continued, and where all improvement work on a large scale in this division will be concentrated. The Magayee officer will also have charge of the Hline and Pounglin forests, while for Pegu, Zamayee and Baunee there should be a forest ranger directly under the divisional officer. It would undoubtedly be better to have a separate officer for the forests of the Rangoon division, but it is necessary to frame the organisation of the current work of the department on as economical a scale as possible, on account of the officers urgently required for demarcation work.

3. Drift and sea-shore timber, river police, and drift timber stations on Irrawaddy and Hline river, 1 Assistant Conservator.

It is necessary to form this division for the better control of drift timber, for the prevention of timber theft, and to work out more vigorously than has hitherto been done the large quantities of timber drifted out to sea, much of it ages ago, and lying stranded and half embedded in mud near the mouth of the Sittang river.

4. Tharrawaddy	Division,		1 Deputy Conservator and 1 Assistant Conservator.
5. Prome	ditto		1 Deputy Conservator.
6. Western	ditto	North,	1 Deputy Conservator.
7. Ditto	ditto	South,	1 Assistant Conservator.
8. Sittang	ditto		1 Deputy Conservator and 1 Assistant Conservator.

This division is much too extensive, and it is merely for the sake of economy that no additional officers are here proposed. Work must be concentrated and limited at present to protection and the working out of dry timber, until demarcation commences in this division.

9. Salween division (including Kadoe), 1 Deputy Conservator and 1 Assistant Conservator.

The same remark as that made under Sittang Division applies here.

10. Tavoy and Mergui, 1 Deputy Conservator.

Total 9 Deputy and 9 Assistant Conservators. The officers are entered according to the existing classification, Deputy Conservators at rates of pay from Rs. 500 to 900, Assistant Conservators at Rs. 250, 350 and 450. This does not provide for Arracan, nor for an Assistant to the Conservator, both of which do not press at the present time.

In addition to these there must be at least two Supernumerary Assistant or Sub-Assistant Conservators to fill temporary vacancies, making a total of 21 officers including the Conservator. This I hold to be the smallest staff with which the forests of British Burma can be efficiently managed. I would not in all cases permanently assign a Deputy Conservator to any division, but I would provide that there should always be two Deputies on the demarcation staff, and one at each of the following divisions:—Rangoon, Tharrawaddy, Sittang, Salween. To maintain this staff on its full strength, a regular supply of junior assistants at the rate of one a year will be needed. No sanguine expectations should be entertained regarding the probability of recruiting this staff sufficiently from local sources in Burma at present. It would therefore be a great advantage if arrangements could be made to recruit the forest service of Burma regularly by trained assistants from home to the extent here indicated. Language, climate and vegetation separate the forest service of Burma from that of the other provinces under the Government of India, and the Forest Department in this province will probably more and more become a local service. If of the 9 proposed Deputy Conservators there are 2 on Rs. 900, 3 on Rs. 700 and 4 on Rs. 500, and if among the assistants a suitable proportion is assigned to the upper grades, the superior forest staff in Burma will not even stand on the same footing as the Police, and this, though the same special professional training is not required in the Police as in the Forest Department.

The gazetted staff of Police Officers in Burma consists of an Inspector-General on Rs. 1,800, 2 District Superintendents on Rs. 900, 2 on Rs. 800, 2 on Rs. 700, 2 on Rs. 600, and 4 on Rs. 500, of 2 Assistant Superintendents on Rs. 430, and of 7 on Rs. 400. Thus, of 22 gazetted appointments, there is a larger proportion in the higher grades than in the staff here suggested for the forests. Still, the present suggestions, if adopted, will greatly improve matters, and this appears to me to be absolutely necessary. Two officers have lately left the Forests, one for the Police, the other for the Commission, both I understand draw higher pay now than they had in the Forests or than they would have drawn in the Forests by this time, and others, as is well known, have been transferred to India. The result of this is a strong desire, which, I fear, is shared by many forest officers in Burma, either to be transferred to India, or to another Department in this province. These feelings cannot be justified, but they exist, and it is only right to state facts plainly.

With the limited staff here suggested the work can only progress in a satisfactory manner by concentrating it upon certain places. Thus, it would be most desirable to demarcate reserves in the Attaran forests, and to commence plantations on a large scale there, but it probably will be necessary to defer this, like many other useful projects, for the present, until either the subordinates are more efficient, or a special officer can be made available for this work.

Financial prospects.

28. Appended to this report is a statement of the receipts and disbursements on account of forest administration in British Burma, arranged according to the three periods adopted by Major Seaton in his report on the management of the Burma Forests of March 1874. It will be seen that the average revenue during the first 6 years from 1856-57 to 1861-62 was Rs. 2,77,352, during the second 6 years Rs. 6,70,935, and during the last period of 7 years Rs. 9,08,908. The average annual cash surplus during the same time rose from Rs. 30,357 to Rs. 3,85,920 in the second,

and to Rs. 4,66,621 in the third period. In 1873-74 and 1874-75 the working charges were higher, and the surplus lower than usual, because the permit system was abolished during that time, and the working of all forests on Government account was undertaken, which entailed heavy outlay. This outlay will, however, produce a large increase of revenue during the current and next year, and it is not impossible that in a few years the annual cash surplus may reach the sum of eight lakhs, though it will not be maintained at that figure until regular girdling operations are resumed. Nearly the whole of the revenue has hitherto been derived from teak timber, and the great question of course is whether the growing stock of teak in the forests under the control of the Forest Department is equal to furnishing a continuous annual yield of 45,000 tons, the outturn of which has produced the revenue of the last period.

This is a question which must be taken in hand as soon as forest demarcation has become a matter of regular business routine, and its steady progress is ensured. Meanwhile, the girdling operations have been suspended, and the yield of the next few years will come from timber previously girdled and from other dry timber in the forests. It will probably be advisable to resume girdling operations gradually as our knowledge of the present resources of the different forest districts increases. The measures requisite to attain this end will be the subject of another report, which must be based upon a longer visit to Burma. An important contribution to our knowledge in this respect may be expected from the systematic examination of the forests selected for demarcation, which is suggested in paragraph 15 of the present report. All this will tend for a series of years to diminish the yield in teak timber from the forests. This, however, will be more than made up by increased collection of sea-shore timber, by the operations of the Deparment in timber of other kinds, and by the duty proposed to be levied on the reserved kinds of timber other than teak exported from the forests. Under these circumstances I see no reason to anticipate a considerably reduced surplus in consequence of the temporary suspension of girdling operations. Regarding the future yield of teak timber no forecast is possible at present; our knowledge of the present growing stock in the forests is much less than it was in 1862 or in 1868. We know that *toungya* cultivation has made great havoc, but we know on the other hand that many of the forests abound in young first class trees, which have grown up from second class trees since they were first examined between 1856 and 1862, and that, barring *toungya* cultivation, the rigid protection of teak since 1856 has had the effect of largely increasing its proportion in many of the forests. We know quite enough of the present resources in mature timber to say that we might almost double our forest revenue by resuming girdling operations at once. This, however, must not be done; we must wait until we are prepared with a regular plan for each forest district.

The systematic examination of the growing stock of teak, which must now be made in order to lay a safe basis for the girdling operations of the next 10 years, will however require more officers acquainted with the country and the forests than are available at present, and until the staff is strengthened in the manner suggested, and until arrangements are made to recruit it regularly, nothing of importance can be attempted in that respect, and the work must be limited to the demarcation of reserves and to such current work as may be indispensable. These remarks will have made it clear that the question of a rapid increase of surplus revenue from the Burma forests almost entirely depends upon the measures that may be taken to strengthen the superior staff of officers. The natural resources of these forests are magnificent, but we must not permit ourselves to utilise them without first demarcating a large area of permanent reserves, and without basing the annual yield upon a fresh examination of the growing stock, and this two-fold task cannot be undertaken without a considerably increased staff of intelligent and skilful officers for the direction of these operations. It may justly be said that at the present time the surplus revenue which these forests may yield during the next 20 years will mainly depend upon the orders which may be passed upon the proposals for strengthening and regularly recruiting the superior staff which I have submitted in the present report.

Local forest officers should be placed in a more definite relation to Deputy Commissioners of districts.

29. Under the existing organisation the boundaries of forest divisions do not in any way coincide with the boundaries of civil districts. This is a great disadvantage, for it is most desirable, nay necessary, to knit together

more closely the civil and forest administration of the country, and to place divisional forest officers in a more definite relation to Deputy Commissioners. In many respects should the divisional forest officer be in the position of an assistant to the Deputy Commissioner, and particularly so in all matters connected with the district forests and the management of the Karens in the hills, but the first step in this direction should be to make the boundaries of forest divisions coincide with those of civil districts. Here is the difficulty, the Thayetmyo or Prome districts for instance, with forest at the two extremities on the hills, with a large extent of hot and forestless country between, would be most inconvenient as forest divisions.

The matter should however not be lost sight of, for it would be a great advantage and facilitate all dealings with the Karens in the Pegu Yomah, if some of the younger forest officers would pass in Karen; they might then be placed in charge of all revenue affairs of the Karens, whose *tays* (hamlets) and *toungya* grounds will in future be situated among their reserves. They would hold this position as Assistants to the Deputy Commissioner of the district, and might receive a small additional allowance for it.

Forest officers in Burma have splendid opportunities of being the friends of the people in the truest sense of the word, and of being popular among both Burmans and Karens. If they honestly use these opportunities for the benefit of the public service, they will effectually remove all ground for that spirit of antagonism which only too easily arises between public officers of different departments, but which ought never to be tolerated.

APPENDIX.

Notification by the Chief Commissioner of British Burma in the Public Works Department, No. 32. *dated the 2nd June* 1873.

I. Under the provisions of Rule XII, of the rules for the administration of Forests in British Burma, the Chief Commissioner hereby prohibits, within the Government forests, the felling, cutting, lopping, or otherwise using, of all trees of the species known as,

Thitkado,
Thitka

(*a.*)—If below 6 feet in girth measured at 3 feet from the ground, and

(*b.*)—If of 6 feet in girth and above when so measured, unless a *permit* for such felling, cutting, lopping or using has been issued by the Conservator of Forests or other officer authorised in that behalf.

II. The permit, to be issued under the preceding Clause, shall specify:—

(1.)—The maximum number of trees to be felled under it.

(2.)—The time for which it holds good.

(3.)—The local limits of the forest to which it applies.

(4.)—The circumstances under which it may be cancelled and the effect of cancellation.

Such permit shall not be transferable.

III. For every tree of the kind specified in Clause I for which a permit is required, a duty of 8 annas shall be payable before issue of the permit, and for every ton of such timber a duty of Rs. 4-8 (exclusive of any previous payment) shall be payable at the Revenue stations specified in Clause IV.

IV. The Revenue Stations are as follows:—

For forests above Toungoo, including Khaboung	Toungoo.
Forests above Shweygyeen	Shweygyeen.
Forests below Shweygyeen, also Pegu and Pounglin forests . .	Puzzoondoung.
The Hline, Tharrawaddy and Prome Forests	Rangoon.
Forests of Salween and tributaries including the Beeling . . .	Kado.
Attaran Forests	Nantay.

All timber of the species mentioned in Clause I, which may be found lying in any Government forest, or in transit by land or water or at any Revenue Station, which on measurement is found to be of less girth at the butt end than 6½ feet shall be deemed to have been felled contrary to Clause I and shall be liable to confiscation under the Forest law.

Provided always, that such logs shall be passed, if it be proved that they are top pieces corresponding in size with the end-girth of other lawfully felled logs, or that they were felled *bonâ fide*, before the issue of this Notification.

Notification by the Chief Commissioner of British Burma, in the Revenue Department, No. 1, *dated the 1st January* 1876.

THE following notification is issued by order of the Chief Commissioner of British Burma, under the provisions of Rule XII of the rules for the administration of Forests in British Burma, dated the 2nd August 1865:—

1. Within the Government Forest no trees of the kinds undermentioned, if below twelve feet in girth, measured at six feet from the ground, may be felled, cut, tapped, or otherwise used without a permit granted by an officer duly authorised in that behalf:—

(1)—Thingan.	(7)—Engyin.
(2)—Thitsee.	(8)—Theya.
(3)—Kokoh.	(9)—Eng.
(4)—Pynkadoe.	(10)—Pymmah.
(5)—Padouk.	(11)—Kanyin.
(6)—Anan.	(12)—Sha.

The Chief Commissioner reserves to himself the right of modifying this list from time to time or adding other kinds of trees thereto.

2. The permit to be granted under clause 1 shall specify—

(1)—the maximum number of trees to be felled under it;

(2)—the time for which it holds good;

(3)—the local limits of the forest to which it applies;

(4)—the circumstances under which it may be cancelled, and the effect of cancellation.

Such permit shall not be transferable.

3. There will be two classes of permits—free permits, and trade permits. Free permits will be granted at the discretion of the officer granting the permit for all timber or other produce which is used for the domestic or agricultural requirements of the inhabitants of villages in the vicinity of the forests, and no payment of any kind shall be levied for timber used, or any forest produce cut or removed under free permits. Trade permits will be granted for

trees felled and timber removed for the purposes of trade and merchandise. For the purchase of all timber cut or removed under trade permits, payments at the following rates shall be made:—

For every tree of Eng and Pymmah the sum of four annas shall be paid before the tree is felled; and for all timber of Eng and Pymmah, the sum of two rupees per ton of fifty cubic feet shall be paid in addition, before such timber is permitted to pass any timber stations which may have been notified in the *British Burma Gazette*, by the Conservator of Forests.

For every tree of the other ten kinds specified in clause 1, the sum of eight annas shall be paid before the tree is felled, and for all timber of such kinds the sum of four rupees and eight annas per ton of fifty cubic feet shall be paid in addition, before such timber is permitted to pass any timber stations which may have been notified in the *British Burma Gazette* by the Conservator of Forests.

4. For the extraction of resin, *thitsee*, or wood-oil, or for the making of cutch and charcoal, payment shall be made under such rules and at such rates as the Chief Commissioner may from time to time direct.

5. This notification shall be held to apply to all trees of the kinds specified in clause 1, which may be felled, cut, tapped, or otherwise used after the date of the present notification. For the removal of timber trees felled before that date free permits will be granted, and such timber shall not be liable to any payment under this notification, provided it is passed at a timber station before the 1st January 1877, after which date it will be liable to the payments prescribed in clause 3.

6. Persons committing a breach of the provisions of this notification will be prosecuted under the forest rules.

Receipts and disbursements of the Forest Department, British Burma.

Year.	Receipts.	Disbursements. A.	Disbursements. B.	Surplus.	Remarks.
	Rs.	Rs.	Rs.	Rs.	
1856-57	186,244 (Figures for	1,17,277 Tenasserim	39,052 not known.)	(Deficit) 70,085	Pegu.
1857-58	80,620 (Figures for	2,09,779 Tenasserim	45,334 not known.)	(Deficit) 1,74,493	Ditto.
1858-59	4,30,679	1,40,255	58,784	2,31,640	Ditto.
Ditto	71,106	49,948	11,423	9,735	Tenasserim.
1859-60	2,17,504	1,11,200	62,458	43,846	Pegu.
Ditto	44,090	12,728	12,019	19,343	Tenasserim.
1860-61	2,50,926	2,08,893	67,860	(Deficit) 25,827	Pegu.
Ditto	86,059	1,638	11,086	73,335	Tenasserim.
1861-62	3,96,885	2,39,392	82,842	74,651	British Burma.
Total for 6 years ...	16,64,113	10,91,110	3,90,858	1,82,145	
Average for 6 years ...	2,77,352	1,81,852	65,143	30,357	
1862-63	3,53,487	2,26,254	83,676	43,557	British Burma.
1863-64	7,65,619	1,44,404	66,934	5,54,281	Ditto.
1864-65	9,36,233	1,77,158	86,081	6,72,994	Ditto.
1865-66	8,98,629	2,21,739	90,327	5,86,563	Ditto.
1866-67	4,24,054	2,04,591	80,544	1,38,919	Ditto.
1867-68	6,47,590	2,25,049	1,03,339	3,19,202	Ditto.
Total for 6 years ...	40,25,612	11,99,195	5,10,901	23,15,516	
Average for 6 years ...	6,70,935	1,99,865	85,150	3,85,920	
1868-69	8,16,171	3,22,981	99,191	3,93,999	British Burma.
1869-70	9,84,773	3,11,404	1,10,058	5,63,311	Ditto.
1870-71	8,18,124	2,89,445	1,11,293	4,17,386	Ditto.
1871-72	7,72,399	2,45,514	1,32,936	3,93,949	Ditto.
1872-73	8,27,469	2,03,929	1,32,095	4,91,445	Ditto.
1873-74	10,68,621	3,32,391	1,42,140	5,94,090	Ditto.
1874-75	10,74,802	5,31,841	1,30,797	4,12,164	Ditto.
Total for 7 years ...	63,62,359	22,37,505	8,58,510	32,66,344	
Average for 7 years ...	9,08,908	3,19,643	1,22,644	4,66,621	

O. S. G. P.—No. 667, R., A. & C.—11-2-76.—250.